WHAT IS CLAIMED IS:

1. An objective having a first field plane, an intermediate image plane, and a second field plane, the objective comprising

a first partial objective having a first, convex mirror with a first central mirror aperture and a second, concave mirror with a second central mirror aperture; and

a second partial objective having a third, concave mirror with a third central mirror aperture and a fourth, concave mirror with a fourth central mirror aperture;

wherein the first field plane and the intermediate image plane are conjugate planes relative to the first partial objective, and the intermediate image plane and the second field plane are conjugate planes relative to the second partial objective,

wherein the first mirror has a first axial distance from the second mirror, the second mirror has a second axial distance from the intermediate image, and said first and second axial distances have a ratio between 0.95 and 1.05 relative to each other; wherein the third mirror has a third axial distance $Z_{M3\text{-}IM}$ from the second field plane, and said third axial distance conforms to the relationship

$$0.03 \cdot Du_{M3} + 5.0\ mm < Z_{M3\text{-}IM} < \frac{0.25 \cdot Du_{M3}}{\tan(\arcsin(NA))},$$

NA representing a numerical aperture NA in the second field plane, and Du_{M3} representing a diameter of the third mirror; and wherein further the second field plane has a fourth axial distance from the first field plane, and the objective has a Petzval radius whose absolute value is greater than said fourth axial distance.

2. The objective of claim 1, wherein light rays that are not vignetted by said first, second, third and fourth central mirror apertures define a minimum aperture angle in the second field plane, wherein an aperture obscuration is defined as the ratio between the sine of said minimum aperture angle and said numerical aperture NA, and wherein the aperture obscuration has a value of less than 0.6.

3. The objective of claim 2, wherein the ratio of the numerical aperture NA to the aperture obscuration is greater than 1.2.

4. The objective of claim 1, wherein the numerical aperture NA is greater than 0.3.

5. The objective of claim 1, wherein the objective has an overall imaging ratio greater than 4:1 between the first field plane and the second field plane.

6. The objective of claim 1, wherein the objective has a first imaging ratio greater than 1:1 between the first field plane and the intermediate image, and a second imaging ratio greater than 1:1 between the intermediate image and the second field plane.

7. The objective of claim 1, wherein the objective has a first imaging ratio greater than 3:1 between the first field plane and the intermediate image.

8. The objective of claim 1, wherein the first mirror has a first diameter and the second mirror has a second diameter, and wherein said second diameter has a ratio greater than 3:1 to said first diameter.

9. The objective of claim 1, wherein the fourth mirror has a fifth axial distance from the first mirror, and wherein said fifth axial distance is less than 10 percent of the fourth axial distance.

10. The objective of claim 1, wherein the objective consists of the first, second, third and fourth mirrors.

11. The objective of claim 1, further comprising a fifth mirror with a fifth central mirror aperture and a sixth mirror with a sixth central mirror aperture, wherein the sixth mirror follows the fifth mirror in a light path between the intermediate image and the third mirror, and wherein a further intermediate image is formed in said light path between the sixth mirror and the third mirror.

12. The objective of claim 11, wherein the fifth and sixth mirrors are concave mirrors.

13. The objective of claim 11, wherein the fifth mirror has a sixth axial distance from the further intermediate image, and wherein said sixth axial distance is less than 5 percent of the fourth axial distance.

14. The objective of claim 11, wherein the sixth mirror has a seventh axial distance from the first mirror, and wherein said seventh axial distance is less than 10 percent of

the fourth axial distance.

15. The objective of claim 11, wherein the fifth mirror has an eighth axial distance from the fourth mirror, and wherein said eighth axial distance is less than 10 percent of the fourth axial distance.

16. The objective of claim 1, wherein the objective consists of the first, second, third, fourth, fifth and sixth mirrors.

17. The objective of claim 1, wherein the objective has a free working distance FWD_{Obj} between the first field plane and the first partial objective, said free working distance FWD_{Obj} being greater than 20 percent of the fourth axial distance.

18. The objective of claim 1, wherein aberrations are corrected in the second field plane within a field of more than 1.0 mm diameter.

19. The objective of claim 1, wherein the objective has a spherical aberration in the second field plane, and

wherein said spherical aberration has a ratio of less than 10^{-5} to the fourth axial distance.

20. The objective of claim 1, wherein the fourth axial distance is at most 3000 millimeters.

21. The objective of claim 1, wherein the objective projects a reduced image of an object in the first field plane into the second field plane.

22. A lithographic projection apparatus comprising an illumination system and the objective of claim 21, wherein the object is a mask carrying a microstructure and wherein a photosensitive substrate is arranged in the second field plane to receive said reduced image.

23. A method of exposing photosensitive substrates in the lithographic projection apparatus of claim 22, wherein the method comprises:

- illuminating the mask by means of the illumination system with a ray pencil,
- modulating the ray pencil by means of the mask, and
- projecting the modulated ray pencil onto the photosensitive

substrate by means of the objective.

24. A lithographic projection apparatus comprising an illumination system and the objective of claim 21, wherein the object is a controllable array of micromirrors and wherein a photosensitive substrate is arranged in the second field plane to receive said reduced image.

25. A method of exposing photosensitive substrates in the lithographic projection apparatus of claim 24, wherein the method comprises:

- illuminating the controllable micromirror array by means of the illumination system,
- reflecting ray pencils from the micromirrors,
- by means of a control unit, driving the micromirrors in accordance with a prescribed pattern in such a way that only a part of the reflected ray pencils will fall on the photosensitive substrate through the objective, and
- projecting the reflected ray pencils onto the photosensitive substrate by means of the objective.

26. The objective of claim 1, wherein the objective projects an enlarged image of an object in the second field

plane into the first field plane.

27. An inspection system, comprising the objective of claim 26, an illumination system, and an observation unit with an entry surface, wherein said entry surface is located in the first field plane to receive said enlarged image projected by the objective.

28. A method of inspecting an object by means of the inspection system of claim 27, wherein the object to be inspected has a surface area carrying structures, the method comprising the steps:

- illuminating said surface area by means of the illumination system with a ray pencil, with the result that rays of the ray pencil are diffracted in different directions by said structures,
- projecting the diffracted rays onto the entry surface of the observation unit.

29. An objective having a first field plane, an intermediate image plane and a second field plane, the objective comprising

a first partial objective having a first mirror with a

first central mirror aperture and a second mirror with a second central mirror aperture; and

a second partial objective having a third mirror with a third central mirror aperture and a fourth mirror with a fourth central mirror aperture;

wherein the first field plane and the intermediate image plane are conjugate planes relative to the first partial objective;

wherein the intermediate image plane and the second field plane are conjugate planes relative to the second partial objective;

wherein the objective has a first imaging ratio greater than 1:1 between the first field plane and the intermediate image, and a second imaging ratio greater than 1:1 between the intermediate image and the second field plane.

30. The objective of claim 29, wherein the objective has a first imaging ratio greater than 3:1 between the first field plane and the intermediate image.

31. The objective of claim 29, wherein the first mirror has a first diameter and the second mirror has a second diameter, and wherein said second diameter has a ratio greater

than 3:1 to said first diameter.

32. The objective of claim 29, wherein the objective has an overall imaging ratio greater than 4:1 between the first field plane and the second field plane.

33. The objective of claim 29, wherein light rays that are not vignetted by said first, second, third and fourth central mirror apertures define a minimum aperture angle in the second field plane, wherein an aperture obscuration is defined as the ratio between the sine of said minimum aperture angle and said numerical aperture NA, and wherein the aperture obscuration has a value of less than 0.6.

34. The objective of claim 33, wherein the ratio of the numerical aperture NA to the aperture obscuration is greater than 1.2.

35. The objective of claim 29, wherein the numerical aperture NA is greater than 0.3.

36. The objective of claim 29, wherein the first mirror is a convex mirror, the second mirror is a concave

mirror, the third mirror is a concave mirror, and the fourth mirror is a concave mirror.

37. An objective having a first field plane, a first intermediate image plane, a second intermediate image plane, and a second field plane, the objective comprising

a first partial objective having a first mirror with a first central mirror aperture and a second mirror with a second central mirror aperture;

a second partial objective having a third mirror with a third central mirror aperture and a fourth mirror with a fourth central mirror aperture; and

a third partial objective having a fifth mirror with a fifth central mirror aperture and a sixth mirror with a sixth central mirror aperture

wherein the first field plane and the first intermediate image plane are conjugate planes relative to the first partial objective;

wherein the first intermediate image plane and the second intermediate image plane are conjugate planes relative to the second partial objective;

wherein the second intermediate image plane and the second field plane are conjugate planes relative to the third

partial objective.

38. The objective of claim 37,

wherein the objective has a first imaging ratio greater than 1:1 between the first field plane and the first intermediate image, and a second imaging ratio greater than 1:1 between the first intermediate image and the second field plane.

39. The objective of claim 37, wherein the objective has a first imaging ratio greater than 3:1 between the first field plane and the first intermediate image.

40. The objective of claim 37, wherein the objective has an overall imaging ratio greater than 4:1 between the first field plane and the second field plane.

41. The objective of claim 37, wherein the numerical aperture NA is greater than 0.3.

42. The objective of claim 37, wherein the first mirror is a convex mirror, the second mirror is a concave mirror, the third mirror is a concave mirror, the fourth mirror

is a concave mirror, the fifth mirror is a concave mirror and the sixth mirror is a concave mirror.

43. The objective of claim 37, wherein the first mirror is a convex mirror, the second mirror is a concave mirror, the third mirror is a concave mirror, the fourth mirror is a concave mirror, the fifth mirror is a convex mirror and the sixth mirror is a concave mirror.